

## LEED® with COLD-FORMED STEEL

### SUSTAINABLE STEEL

Steel is one of the world's most sustainable construction materials. Its strength and durability coupled with its ability to be endlessly recycled without ever losing quality make it truly compatible with long-term sustainable development. The steel industry is one of the few industries that can claim to have truly embraced the benefits of reducing energy to manufacture its products. Between 1990 and 2010, the energy use per ton of steel was reduced by 27%.



### An authentic solution for sustainable building construction

Each year, more steel by weight is recycled in North America than paper, plastic, aluminum and glass, combined. In 2012 alone, 88 million tons of steel were recycled in North America

- Recycling steel saves the energy equivalent to power 20 million homes for one year.
- All North American steel products have a significant amount of recycled content, including some products with more than 90 percent.
- Today, 97 percent of steel by-products are re-used.
- While other building materials can only be recycled into a lower quality product, steel can be recycled over and over again and remade into new products without any loss of quality. It's the only true cradle-to-cradle building material.
- Steel is the durable. It doesn't rot or serve as food for termites. Coated cold-formed steel used in construction has built-in corrosion resistance that will last hundreds of years beyond the life of a building. Cold-formed steel framing doesn't need maintenance or replacement unlike other materials.
- Steel used in buildings produces little to no construction waste, unlike other structural materials. Cold-formed steel is almost typically delivered to building sites in pre-manufacturer or cut to length products to minimize costs and waste.

### LEED® and GREEN BUILDING with CFS



Cold-formed steel (CFS) is well suited to meet the highest sustainability standards set in all major green building standards and rating programs, including the National Green Building Standard (ICC-700) for residential buildings, ASHRAE Standard 189.1 for commercial construction, the International Green Construction Code (IgCC), and the US Green Building Council's LEED® program, which covers all types of buildings.

LEED® is one of the most popular sets of criteria for scoring the sustainability of a building. Developed by the U.S. Green Building Council, and is known as Leadership in Energy & Environmental Design. LEED® aims to improve occupant well-being, environmental performance, and economic returns of buildings using established and innovative practices, standards, and technologies. Cold-formed steel can play a role in any high performance buildings designed to meet LEED® requirements.

Cold-formed steel products manufactured by Steel Framing Industry Association members help your project quality for

- Up to 9 points under LEED® v4 for BD+C
- Up to 13 points for LEED® 2009 (LEED-NC Version 2.2 and 3.0)

Designers should be aware that a single material doesn't automatically qualify for points under any of the credits. The LEED® process is complex and requires consideration of multiple variables including material characteristics and qualities. However, CFS framing clearly provides an advantage over other framing materials in contributing to many of the credits and a high performing building.

**STEEL FRAMING INDUSTRY ASSOCIATION**

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LEED® v4 was introduced in 2013 and is the newest version of the world's premier benchmark for high-performance green buildings. The minimum number of points for the basic “Certified” level is 40. Points are not easy to come by so every point is important to a designer or owner seeking certification or a higher level of LEED® Silver (50 points), Gold (60 points), or platinum (80 points).

The environmental benefits of steel framing, particularly high recycling rates, recycled content, and steel's inert, non-organic nature, make key contributions to achieving LEED® certification. Credits in LEED® v4 that can be achieved with cold-formed steel include:

### **MR Credit: Building Product Disclosure and Optimization—Sourcing of Raw Materials - 1 point**

Option 2 of this credit recognizes the value of recycled content in materials such as cold-formed steel. A credit is available for projects where at least 25%, by cost, of the total value of permanently installed building products in the project meet the criteria for responsible extraction. The Recycled Content of cold-formed steel makes an important contribution to achieving this goal. Structural material, such as framing, can contribute a maximum of ½ of the cost to this credit.

### **MR Credit: Construction and Demolition Waste Management - up to 2 points**

This credit has two options but only one can be applied to a given project.

- Option 1 is based on achieving a reduction in construction waste going to a landfill. Cold-formed steel framing is 100% recyclable, an attribute that can contribute toward the 50% diversion rate for the first point and 75% for the second point. However, steel can only be counted as one of the three products in the first case and four in the second case that are required to achieve these points. Although steel's recyclability can contribute to the points in Option 1, it makes an even better contribution toward achieving the two points under option 2 of this credit.
- Under option 2, the total project waste must be less than 2.5 pounds per square foot of floor area of the building. Cold-formed steel from most manufacturers is cut to length and/or panelized off site. Thus, it can be a critical contributor to the two points under this option compared to other structural materials that contribute extensive amounts of waste at the construction site.

### **MR Credit: Building Product Disclosure and Optimization— Environmental Product Declarations - up to 2 points**

LEED v4 approaches building materials content credits in a completely different way than previous editions of LEED by placing an emphasis on transparency and documentation. Cold formed steel can contribute toward achieving points the two options under this credit. These points are achieved through submission of Environmental Product Declarations (EPD) which is compiled from a life cycle assessment (LCA) that is developed according to the rules put forth in the product category rule (PCR).

- In this category, credits are earned when at least 20 installed products from at least five manufacturers provide an EPD. Members of SFIA qualify for ½ of a product through the industry-wide EPD for cold-formed steel framing that is available at this link: <http://EPD-for-CFS>. This can be increased to a whole credit if your manufacturer member is able to provide a product specific EPD.
- A second option provides for an additional credit when the value of products covered by the EPD represents 50% of the project cost. To achieve this point, the EPD or other multi-attribute analysis must show improvement in three of five specified impact categories. The information necessary to achieve this credit must be specific to a manufacturer's product compared to the industry average.

### **MR Credit: Design for Flexibility – 1 point**

This credit, although limited to health care buildings, allows one point for efficient use of space including future expansion. Cold-formed steel can be used for at least two of the strategies that can be employed to earn this point (only one strategy is required). One strategy involves building extra shell space that can be used to expand into later. The second allows roof-top expansion to award this point. Because of its light weight, CFS has been used successfully for roof top expansion for urban infill projects.

### **EQ Credit: Low Emitting Materials – 1 point**

This Indoor Environmental Quality (EQ) credit offers multiple ways to obtain from one to five points, although the components that impact CFS are limited to earning one of these five points. CFS can contribute directly to obtaining the first point that requires at least two components of the building to meet the low emitting material requirements. Because steel is inert, the criteria specifically considers it to be non-emitting.

### **EQ Credit: IAQ Assessment – 2 points**

The second option under this credit awards two points to buildings that successfully pass air quality testing. Steel will not contribute to the emissions that are required to be tested and should be a preferred choice for the structures for those seeking points under this credit.

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## **LEED 2009® (LEED-NC VERSION 2.2 AND 3.0)**

As new versions of LEED are released, previous versions are retired or “sunset” – keeping the newest projects paired with the latest and best version of the rating system. With the introduction of LEED v4, a project aimed for certification under the LEED 2009 rating system must be registered by October 31, 2016 and the deadline for completing the project is June 30, 2021. For those opting to use the 2009 version, steel contributes to earning points in the following credits:

### **LEED® 2009 MR Credit 1.1: Building reuse – up to 3 points**

This credit is designed to encourage the use of existing buildings and their components. CFS is used routinely in rehabilitation/remodeling projects, for example, in reconfiguring a building for a new tenant, while allowing the main building structure and dividing walls to remain intact. CFS has also been used as a method for expanding upward on older existing buildings as opposed to a teardown and rebuild. Its light weight often makes it feasible to add new stories to existing buildings, especially in older urban areas.

### **LEED 2009 Credit MR 2 (Construction Waste Management) – up to 2 points**

Credits are awarded based on recycling and recovery rates for construction products. Steel is 100% recyclable, and because it plays a key role in diverting construction debris from the waste stream is eligible for LEED Credits MR 2.1 and 2.2. The specific contribution will vary by project and must be determined by the contractor.

### **LEED 2009 Credit MR 4 (Recycled Content) – up to 2 points**

Cold-formed steel framing contains a high percentage of recycled content, earning one LEED credit for recycled content that constitutes 10% of the total value of construction materials and a second point when recycled content is 20% of the total cost.

Additional points for the Innovation in Design (ID) credit are available if a project's overall recycled content exceeds 30% or higher. See below: LEED 2009 Credit ID: Innovation in Design.

### **LEED 2009 Credit MR 5 (Regional Materials) – up to 2 points**

LEED Credit MR 5 requires the jobsite to be within a 500 mile radius of the manufacturing facility and the location where raw materials are extracted. One hundred percent of the material does not have to be extracted and manufactured within the 500 miles. The requirements allow for a percentage of the product to qualify. The national network of SFIA Manufacturer members makes it likely that they will be able to qualify for this credit within the market areas that the individual companies service.

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**IEQ Credit 3.2: Construction Indoor Air Quality management Plan – Before Occupancy – 1 point**

Option 2 under this credit awards one point for air testing before occupancy. Because of its inert nature, steel will not contribute any emissions and specifically those identified in the requirements. CFS framing is a key strategy used to obtain this point.

**LEED 2009 Credit ID 1: Innovation in Design – up to 3 points**

Path 2 under this credit awards up to three points for exemplary performance above and beyond the basic levels for other LEED® credits. By reaching the next incremental thresholds (30%, 40%, etc.) for a credit, a building will receive up to a maximum of three credits. CFS is a natural for helping to achieve these points given the minimum default rate for recycled content reported by the Steel Recycling Institute is 34.9%. Your SFIA member manufacturer is likely to produce or have available cold-formed steel framing with even higher content, and can provide you with the necessary documentation when you order materials.

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More information about Recycled Content is available at this location: <http://goo.gl/NlszN3>

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